

Notice of Allowability

Application No.

10/767,394

Examiner

Amara Abdi

Applicant(s)

FERMAN ET AL.

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/18/2007.
2. ☒ The allowed claim(s) is/are 28 and 30.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 01/28/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

JINGGE WU
SUPERVISORY PATENT EXAMINER

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with the Applicant's Attorney (MR. Scott C. Krieger, with Reg. No. 42,768) on 01/15/2008, without traverse.

The new claim 30 is amended to include all of the limitations of the base claim as the following:

An image segmentation method, said method comprising:

- a) obtaining pixel attribute data for a mixed-content image;
- b) identifying a text region in said image;
- c) identifying a background region in said image, wherein said identifying comprises:
 - i) calculating a luminance histogram for said image,
 - ii) identifying a histogram bin containing a maximum number of values,
 - iii) comparing said maximum number of values to a threshold value, and
 - iv) classifying a pixel as background if said pixel correspond to said histogram bin and said maximum number of values is greater than said threshold value;

d) analyzing areas in said image outside any of said background regions and outside any of said text regions to identify contone regions, wherein said analyzing comprises:

i) calculating an area luminance histogram for said areas not classified as background or text,

ii) determining a number of populated histogram bins whose pixel count exceeds a threshold value,

iii) comparing said number of populated histogram bins to a bin number threshold value,

iv) classifying said area as a contone region when said number of populated histogram bins exceeds said bin number threshold value;

e) analyzing said contone region to identify any text regions present within said contone regions;

f) analyzing said contone regions to identify any background regions present in said contone regions;

g) analyzing areas in said contone regions outside any of said background regions and outside any of said text regions to identify contone sub-regions;

h) repeating steps e-g until no further sub-regions are found;

i) removing any contone regions whose area is smaller than one tenth of the square of the page width.

JIMCOE WILKINSON
SUPERVISORY PATENT EXAMINER

Reason of Allowance:

1. Applicant's response to the last Office Action, filed December 18th, 2007 has been entered and made of record.

2. The following is an examiner's statement of reasons for allowance:

- Independent claim 28 is allowable over the prior art of record.
- Independent claim 30 is allowable over the prior art of record.

a) Independent claim 1 recites the limitation of: "verifying the contone region using region propertied, where the contone regions are eliminated when a contone region's area is smaller than the square of one tenth of the page width". The combination of these features as cited in the claim in combination with other limitations of the claims, are neither disclosed nor suggested by the prior art of record.

b) Independent claim 30 recites the limitation of: "removing contone regions whose area is smaller than the square of one tenth of the page width". The combination of these features as cited in the claim in combination with other limitations of the claims, are neither disclosed nor suggested by the prior art of record.

The closest reference of US 6,973,213 to Fan et al. disclose a background based segmentation. However this reference either by itself or by combination with other references does not tech the limitation that the contone regions are eliminated when a contone region's area is smaller than the square of one tenth of the page width, or removing contone regions whose area is smaller than the square of one tenth of the page width.

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3. In view of the amended claims and the Examiner's amendments, the new claim 30 includes all of the limitations of the base claim.

Therefore, claims 28 and 30 are allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submission should be clearly labeled "Comments on Statement of Reasons of Allowance."

Contact Information:

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amara Abdi whose telephone number is (571) 270-1670. The examiner can normally be reached on Monday through Friday 7:30 Am to 5:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wu Jingge can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amara Abdi
01/16/2008


JINGGE WU
SUPERVISORY PATENT EXAMINER